

Claims

1. A safety paper with a structure making possible a contactless checking of an authenticity feature, *wherein* characterized in that the structure is an electronic circuit (1, 4, 7) which emits an output signal indicating the presence of the authenticity feature in response to a received input signal.

2. A safety paper according to claim 1, *wherein* characterized in that the structure forming the circuit (1, 4, 7) comprises a read-only storage set to a predetermined information contents, whose information contents can be transmitted with the emitted output signal.

3. A safety paper according to claim 1 or 2, *wherein* characterized in that the structure (1, 4, 7) forming the circuit comprises a write/read storage into which the information contents transmitted by the received input signal can be written whose information contents can be transmitted with the emitted output signal.

4. A safety paper according to claim 3, *wherein* characterized in that the write/read storage is formed by a shift register into which a binary representation of the information contents transmitted with the input signal can be sequentially stored.

5. A safety paper according to *claim 1*, characterized in that the structure (1, 4, 7) forming the circuit comprises an energy supply which can be supplied by a contactless energy transmission.

~~A~~ 6. A safety paper according to claim 5, ~~characterized in that~~ the energy transmission can be realized by a carrier frequency oscillation provided for modulation with the input signal.

~~A~~ ~~wherein~~ 7. A safety paper according to one of the claims 1 to 6, ~~characterized in that~~ the structure forming the circuit (1, 4, 7) is embedded in the paper layer of the safety paper.

~~A~~ ~~wherein~~ 8. A safety paper according to one of the claims 1 ~~to 7~~, ~~characterized in that~~ the structure forming the circuit (1, 4, 7) comprises an electronic circuit chip and a pattern (7) connected therewith and serving as a sending/receiving antenna.

~~A~~ 9. A safety paper according to claim 8, ~~characterized in that~~ the pattern serving as a sending/receiving antenna is applied externally to the paper layer and is coupled capacitively by the paper layer, acting as a dielectric, to the remaining portion of the circuit embedded in the paper layer.

~~A~~ ~~wherein~~ 10. A safety paper according to claim 8 or 9, ~~characterized in that~~ the pattern (50, 50') serving as sending/receiving antenna has the shape of a dipole antenna.

~~A~~ 11. A safety paper according to claim 10, ~~characterized in that~~ the pattern forming the dipole antenna is comprised of two conductor strips (50, 50') extending along a common straight line, which at their facing ends are contacted with connecting areas (70, 70') of the circuit chip (40).

A 12. A safety paper according to claim 11 ~~characterized in~~
wherein that the two conductor strips (50, 50') are formed by portions of a thin insulating polymer substrate strip that have been made conductive, between whose insulating portion delimited between the facing ends of the conductor strips (50, 50') the circuit chip (40) is positioned.

A 13. A safety paper according to claim 1 ~~characterized in~~
wherein that the circuit chip (40) is formed on a thin-ground semiconductor substrate which is arranged on the insulating portion of the polymer substrate strip.

A 14. A safety paper according to one of the claims 1 to 13, ~~characterized in~~
wherein that the structure forming the circuit (1, 4, 7) comprises an integrated polymer circuit chip (4) formed on a flexible polymer substrate.

A 15. A safety paper with a structure making possible a contactless checking of an authenticity feature, ~~characterized in~~
wherein that the structure comprises an electro-optical surface area having the authenticity feature, whose light reflection or transmission properties can be controlled as a function of the electrical potential supplied to the surface area.

A 16. A safety paper according to one of the claims 1 to 15, ~~characterized in~~
wherein that the structure has a photovoltaic surface area serving as an energy supply.

A 17. A safety paper according to claim 15 and one of the claims 11 or 12, ~~characterized in~~
wherein that the conductor strips (50,

50') are formed by conductive coatings on one side of a thin insulating support foil and the photovoltaic area is provided on the other side of the support foil.

A 18. A safety paper according to one of the claims 8 to 13, *wherein* characterized in that the pattern (1, 5, 5', 7, 50, 50') serving as a sending/receiving antenna is comprised of a material whose expansion coefficient corresponds substantially to the expansion coefficient of the paper layer.

A 19. A safety paper according to one of the claims 11 to 13, *wherein* characterized in that the conductor strips (50, 50') are penetrated by perforations.

A 20. A safety paper according to one of the claims 1 to 19, *wherein* characterized in that the circuit (1, 4, 7; 40, 50, 50', 70, 70') comprises a micro controller.

21. A safety paper with a structure making possible a contactless checking of an authenticity feature, characterized in that the structure comprises a thermochrome or thermoluminescent surface area comprising the authenticity feature, whose color or luminescence properties can be controlled as a function of heat input.

22. A method for checking the authenticity of documents which are recorded in an optically readable form on a safety paper with a structure making possible a contactless checking of an authenticity feature, wherein at a location checking the document the optically readable contents of the document as well as the

authenticity feature are automatically detected and correlated with one another, characterized in that the structure is an electronic circuit which, in response to a received input signal, emits an output signal representing the authenticity feature, and the location checking the document transmits an input signal to the circuit which triggers the emission of its output signal.

23. A method according to claim 22, characterized in that the input signal transmitted by the checking location to the circuit comprises an information contents which identifies the checking location and is stored in the circuit.

24. A method according to claim 23, characterized in that the stored information contents, which identifies the checking location, can be transmitted with the output signal to a checking location in response to an input signal transmitted subsequently by the checking location.

25. A method according to one of the claims 22 to 24, characterized in that the energy for operating the circuit is transmitted by the checking location with the input signal to the circuit.

26. A method for checking the authenticity of documents recorded on safety paper which have an area provided with an authenticity feature that can be detected contactless, characterized in that the document is provided with an electronic circuit in an area separate from the area having the authenticity feature, in which electronic circuit the authenticity feature

determined by contactless detection is checked and an output signal indicating the result of checking is generated.

27. A device for a contactless checking of authenticity of a document made of a safety paper which is provided with an electronic circuit chip as well as a pattern connected thereto and serving as a sending/receiving antenna and formed as a dipole antenna with dipole branches extending along a common straight line, wherein the electronic circuit chip, in response to a received input signal, emits an output signal representing the authenticity feature, characterized by a transport device by which the documents (100) to be checked are transported along a movement path extending transverse to the common straight line of the dipole branches (50, 50'), two conductors (103, 103') extending in the transport direction (100), one of them arranged in the area of the movement path of the one dipole branch (50) and the other in the area of the movement path of the other dipole branch (50'), respectively, for capacitive coupling with the moving dipole branches (50, 50'), and a sending/receiving device coupled with the conductors (103, 103') for emitting the input signal for the circuit chip (40) and for receiving the output signal representing the authenticity signal.

28. A document made of a safety paper according to one of the claims 8 to 13, wherein the document has two parallel longitudinal edges and two transverse edges extending transverse to the longitudinal edges, characterized in that the circuit chip (4, 40) is arranged in an area of the document that is not contacted by a longitudinal center line extending in the center between the longitudinal edges (3, 3') and parallel thereto and a transverse

center line extending in the center between the transverse edges (2, 2') and parallel thereto.

29. A document made of a safety paper according to one of the claims 8 to 13 or 23, characterized in that the circuit chip (4, 40) is arranged in an area of the document that is not printed.

30. A document made of a safety paper according to one of the claims 1 to 21, characterized in that in an area which is remote from the area in which the electronic circuit (4, 40) is arranged an authenticity feature is arranged that is detectable contactless and can be input into the circuit and checked therein.